

which can extend over a period of time, the capsule remains intact. It does not burst. The transfer of the composition from the interior of the capsule through the membrane wall to the exterior of the capsule is gradual in nature. The transfer is not sudden in nature.

The claims

The membrane wall, as set forth in independent **claim 16** (and thus in all of the claims), is comprised of a urethane/vinyl hybrid polymer which is disclosed in U.S. Patent 5,173,526 to Vijayendran. (The Examiner has relied upon Vijayendran as a secondary reference to reject the claims of this application.) The urethane/vinyl hybrid polymer can be cross-linked with any number of materials including polyaziridine. In this regard, dependent **claims 19, 22, 24, 25, 30, 34 and 35** specifically mention polyaziridine.

The solid, water-soluble chemical composition enclosed in the hollow interior of the capsule, as set forth in dependent **claim 17**, is selected from a variety of materials included in a Markush group. These materials are thus included in all claims which depend from **claim 17**.

The membrane wall can consist of a first material, the mentioned urethane/vinyl hybrid polymer, and it can consist of the first material in combination with a second material. In the latter case, the combination is referred to as a composite material wherein the first material forms a matrix which supports the second material. The second material is a particulate solid. The second material is different from the first material. The second material is not reactive with, soluble in nor a solvent for the first material or the composition enclosed in the capsule. The particle size of the second material, which is greater than submicron, is an important feature of the invention. There is no reference which discloses or suggests that limitation. Dependent **claim 18** (and thus those which depend therefrom) is drawn to the composite material.

The second material is selected from a variety of materials included in a Markush group as set forth in dependent **claim 20**. One specific second material is silica as set forth in dependent **claim 28**.

ART REJECTIONS

The rejection of claims 16, 18, 20, 21 and 23-28 under 35 U.S.C 103(a) as being obvious over Walles et al in view of Vijayendran et al is traversed for the following reasons.

What do Walles et al desire?

1. A membrane wall which will permit water to pass through it from the exterior into the interior of the capsule, but not through it from the interior to the exterior of the capsule.
2. A membrane wall which will burst when a quantity of water has passed through it from the exterior of the capsule into the interior of the capsule.

What do Vijayendran et al desire?

1. A flexible surface which will protect a substrate, such as paper, metals, plastics, and wood, from solvents, corrodants and abrasives. Inherent in this desire is a requirement that water shall not pass through the surface to thereby contact the substrate.

What is the novel aspect of Walles et al?

1. Based upon the Jepson format employed in claim 29 of Walles et al, it is clear that the only novel aspect of Walles et al is the existence of "submicron particles that are substantially inert to the membrane and the agent."

What do Walles et al fail to disclose?

1. A membrane wall comprised of a urethane/acrylic hybrid polymer.
2. Crosslinking anything.
3. Anticoalescents of a size greater than submicron.
4. Diffusion of water through a membrane from exterior to interior and from interior to exterior.
5. A membrane wall which does not burst.

What do Vijayendran et al fail to disclose?

1. The use of a urethane/acrylic hybrid polymer as a membrane wall of a capsule.

Given the above, what is the reason to combine Walles and Vijayendran? What is disclosed in Walles to suggest to a person skilled in the capsule art to combine Walles and Vijayendran to obtain a capsule which will not burst? Similarly, what is disclosed in Vijayendran to suggest to a person skilled in the capsule art to combine Walles and Vijayendran to obtain a capsule which will not burst? THERE IS NO REASON TO COMBINE WALLES AND VIJAYENDRAN. THE EXAMINER HAS IMPROPERLY EMPLOYED THE DISCLOSURE OF THIS INVENTION AS A GUIDE TO REJECT THE CLAIMS OF THIS INVENTION. THE REJECTION IS FATALLY FLAWED AND SHOULD BE WITHDRAWN.

The primary reference, Walles, does not claim, does not disclose and does not suggest a capsule having a hollow interior and a membrane wall comprised of a urethane/vinyl hybrid polymer. Furthermore, the primary reference, Walles, does not claim, does not disclose and does not suggest a capsule having a hollow interior and a membrane wall comprised of a urethane/vinyl hybrid polymer which is cross-linked with anything, including polyaziridine. Walles is irrelevant as a primary reference and should be withdrawn.

Walles discloses that capsules containing chemicals enclosed in the interiors thereof are known in the art. Walles discusses various mechanisms for releasing the chemicals from the capsules one of which is osmotic bursting (Col 1, lines 62-65). According to Walles, osmotic bursting features diffusion of water through the membrane wall to the interior of the capsule, **but** diffusion from the interior of the capsule to the exterior does not occur. Instead, the capsule distends to such a degree that it bursts. (Col 3, line 7 to Col 4, line 37)

The only similarity between Walles and the invention of this application is that this application and Walles each disclose a capsule and each can employ a second material in the capsule wall. There is no other connection. The rejection is based upon material found in the

application of this invention which cannot be employed by the Examiner to support the rejection.

Walles is critical of US Patent 3,992,317, which, according to Walles, discloses a capsule whose operation involves an osmotic bursting release mechanism. Walles complains that the release disclosed in the patent is too slow (Col 1, line 66 to Col 2, line 31). The invention of Walles is, accordingly, directed to a capsule having an osmotic bursting release mechanism in which the composition is released "at a narrowly predetermined time." Walles et al disclose that their capsule is placed in an environment which, "diffuses through the membrane until,....., the membrane ruptures and releases the agent." (Col 2, lines 56-67).

Walles does not disclose or suggest any capsule in which diffusion occurs from exterior to interior and then from interior to exterior. Walles, in fact, teaches away from any capsule which discloses any mechanism involving diffusion in which the capsule does not burst, but instead remains intact. Walles et al do not suggest any variation in the structural or material content of their capsule which would produce a capsule as disclosed and claimed herein. Walles is irrelevant as a primary reference and should be withdrawn.

The release mechanism of Walles is dependent on a membrane wall which will burst. Walles et al specifically disclose that their membrane wall contains "submicron particles" (Col 2, line 41), which Walles refers to as "anticoalescents." According to Walles (Col 6, line 55 to Col 7, line 17), the submicron particles operate to prevent agglomeration of the material employed to make the membrane wall. Such agglomeration operates to produce capsules containing multiple quantities of solid agent particles which detrimentally affects the **bursting** time of the capsules.

Walles does not disclose and does not suggest that "anticoalescents" larger than submicron in size converts a bursting mechanism to a non-bursting mechanism, such as is involved herein. Walles is irrelevant as a primary reference and should be withdrawn.

Walles et al emphasize that selection of the material employed to produce the membrane wall is critical to the function of the burst mechanism of their capsules. Accordingly, functional requirements of the membrane material are set forth (Col 4, line 54 to Col 5, line 60). Immediately thereafter, materials which comply with the functional requirements are disclosed at Col 6, lines 7-43. The material employed herein, a urethane/vinyl hybrid polymer, is not included in the extensive list generated by Walles.

Vijayendran disclose a urethane/vinyl hybrid polymer to protect what is plainly a planar substrate, such as paper, from a solvent. There is no suggestion in Vijayendran that water will diffuse through the polymer. Walles and Vijayendran are in different classes of art. The only connection between Walles and Vijayendran is found in the disclosure of this invention. The Examiner has made improper use of the connection to reject the invention. The rejection is improper and should be withdrawn.

Specific Response to Comments of Examiner

The Examiner asserted that a skilled artisan by routine examination could have determined the size of the second material employed in the membrane wall of this invention. Assuming that such a skilled artisan could have indeed made such a determination, the Examiner has provided no reason to explain why the artisan would have even attempted to make such a

determination. Walles and Vijayendran are in different classes of art. They address different problems. They use different materials. They produce different results. Neither is interested in the problem solved by applicants herein. The Examiner has improperly employed the disclosure of this invention to solve a problem not addressed and not solved by Walles or Vijayendran to achieve a result which is not suggested by Walles and Vijayendran.

The Examiner asserted that a skilled artisan could have selected membrane thickness based on several criteria. Assuming that such a skilled artisan could have indeed made such a selection, the Examiner has opted to ignore the fact that the material employed herein was not disclosed by Walles and that the problem solved herein was not the problem solved by Walles. The Examiner has improperly employed the disclosure of this invention to solve a problem not addressed and not solved by Walles or Vijayendran to achieve a result which is not suggested by Walles and Vijayendran.

basis of rejection

The Examiner asserted that a person skilled in the capsule art would have modified the invention of Walles by substituting the urethane/vinyl hybrid polymer "as suggested by Vijayendran" for the polymer employed by Walles, "because of the expectation of successfully producing controlled-release composition with cost efficiency." The Examiner has cited no disclosure in Vijayendran that the urethane/vinyl hybrid polymer could or should be used to make a capsule. There is no disclosure in Walles or Vijayendran upon which to base any kind of expectation that either a "bursting" or a "non-bursting" capsule could be made with a urethane/vinyl hybrid polymer. The Examiner has assumed without proof that a capsule made with a urethane/vinyl hybrid polymer is cost efficient as compared with one made with the polymers of Walles, but, assuming the truth of that assumption, cost efficiency has never been a basis for grant of a patent. Cost efficiency has never been included in the statutory criteria of **new, useful and not obvious** to support the allowance of an invention. The Examiner has improperly employed the disclosure of this invention to solve a problem not addressed and not solved by Walles or Vijayendran to achieve a result which is not suggested by Walles and Vijayendran.

With respect to the comment of the Examiner which appears on page 5 at paragraph 2, just what is the "express, implicit, or inherent disclosure" which indicates that the urethane/vinyl hybrid polymer could or should be used to make a capsule which relies on diffusion for operation? That the urethane/vinyl hybrid polymer is useful as a protective coating against water, is certainly no "express, implicit, or inherent disclosure" that it permits diffusion of water. A coating on a substrate intended to protect the substrate from water seems to be an implicit indication that the coating would **not** permit diffusion. The Examiner's conclusion, without more, makes no sense.

With respect to the comment of the Examiner which appears on page 5 at paragraph 1, the fact that chemicals are known, presents no motivation or suggestion to combine them to solve a problem which has not been discussed in any art cited by the Examiner. The Examiner has improperly employed the disclosure of this invention as a recipe to solve a problem which is disclosed by applicants, but which is not disclosed in any art cited by the Examiner.

The rejection of Claims 19, 22, 30, 34 and 35 under 35 103(a) as being obvious over Walles and Vijayendran and Garcia, and the rejection of claim 17 under 35 103(a) as being obvious over Walles and Vijayendran and Newlove are traversed in light of the above comments and

the arguments contained in the response dated December 4, 2002. The response dated December 4, 2002, is expressly included herein by reference.

The rejection of claims 19, 22, 30 and 31 under 35 USC 103(a) as being obvious over Walles et al (US 4756844) and Vijayendran et al in view of Garcia et al (US 6436540 B1) is traversed for the above reasons and the following additional reasons.

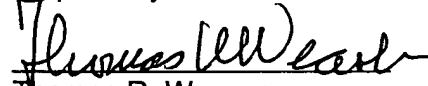
The disclosure of Garcia adds nothing to cure the deficiencies of Walles and Vijayendran as references against the claims of this invention. That Garcia may disclose a cross linking agent for the polymer of Vijayendran does not by that fact render Vijayendran relevant as a reference. Garcia should be withdrawn.

The rejection of claim 17 under 35 USC 103(a) as being obvious over Walles et al (US 4756844) and Vijayendran et al in view of Newlove et al (US 5948735) is traversed for the above reasons and the following additional reasons.

The disclosure of Newlove adds nothing to cure the deficiencies of Walles and Vijayendran as references against the claims of this invention. That Newlove may disclose a breaker employed in the claims of this invention does not by that fact render Walles or Vijayendran relevant as a references. Newlove should be withdrawn.

This application is in condition for allowance. Reconsideration and allowance is requested.

Respectfully submitted,



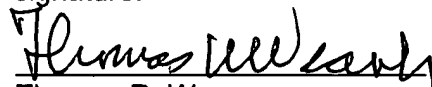
Thomas R. Weaver

Registration No. 25,613

Post Office Box 1405
Duncan, Oklahoma 73534
Telephone: (580) 255-6911

CERTIFICATE OF MAILING

I hereby certify that the within and foregoing document, together with the attachments referred to therein, if any, is being deposited by the undersigned with the United States Postal Service as first class mail in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on the date written just below my signature.



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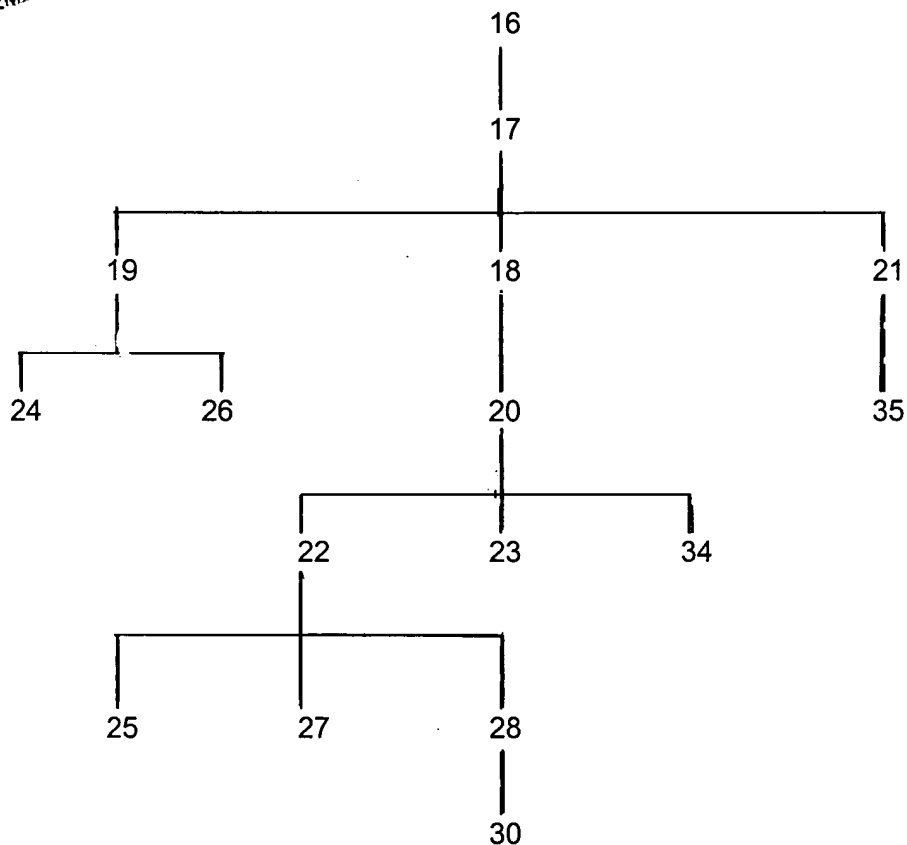
Registration No. 25,613

April 21, 2003
Date



ENCLOSURE A

CLAIM PATTERN AND COMMENTS



Inspection of the claim pattern reveals that the limitations of dependent claim 17 are included in all claims except independent claim 16. However, the reference relied upon by the Examiner to reject claim 17 (Newlove) is not specifically included in the rejection of claims which depend from claim 17. This is confusing. Applicants assume that Newlove is included in the rejection of claims which depend from claim 17. Clarification is requested.

Inspection of the claim pattern reveals that the limitations of dependent claims 19 and 22 are included in all claims which depend from dependent claims 19 and 22. However, the reference relied upon to reject claims 19 and 22 (Garcia) is not specifically included in the rejections of all claims which depend from claims 19 and 22. This is confusing. Applicants assume that Garcia is included in the rejection of claims which depend from claims 19 and 22. Clarification is requested.